

Understanding the Past to Save Our Future: A Case Study of Steller Sea Lion Management

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Background

- Biodiversity loss is a pressing global issue—many ecologists argue we are currently facing the 6th extinction
- Despite conservation efforts, there are currently over 1,300 species listed as endangered or threatened
- It is necessary to understand how conservation management efforts can be made more effective
- To do so, I chose to examine the Steller sea lion as a case study of conservation policy and management

Research Question

What conclusions can be drawn from the western Steller sea lion case study about the efficacy of current conservation management efforts?

Internship and Methods

- Interned at the National Oceanic and Atmospheric Administration (NOAA)'s Marine Mammal Labs
 - quality control/quality assessment for AI detected images of Steller sea lions (fig. 1)
- Conducted a semi-systematic literature review
 - summary of relevant works and thematic analysis
- Gathered data on population count and important management acts



Figure 1: Aerial survey image of Steller sea lions before an AI detection is conducted. Source: NOAA Fisheries

Case Study of the Steller Sea Lion

- The Steller sea lion (SSL) population decline has been a conservation issue since the late 1970's–1990's (fig. 2)
- The population was listed as endangered under the Endangered Species Act in 1990 (fig. 3)
- Over \$120 million was allocated towards western Steller sea lion research and management/policy such as Biological Opinions (BiOps) and recovery plans (fig. 3)
- Despite management efforts, the western population of the Steller sea lion remains endangered, and researchers are still unsure of what is preventing significant recovery



Figure 2: Western Steller sea lion adult male (center) accompanied by adult females (peripheral). Source: NOAA Fisheries

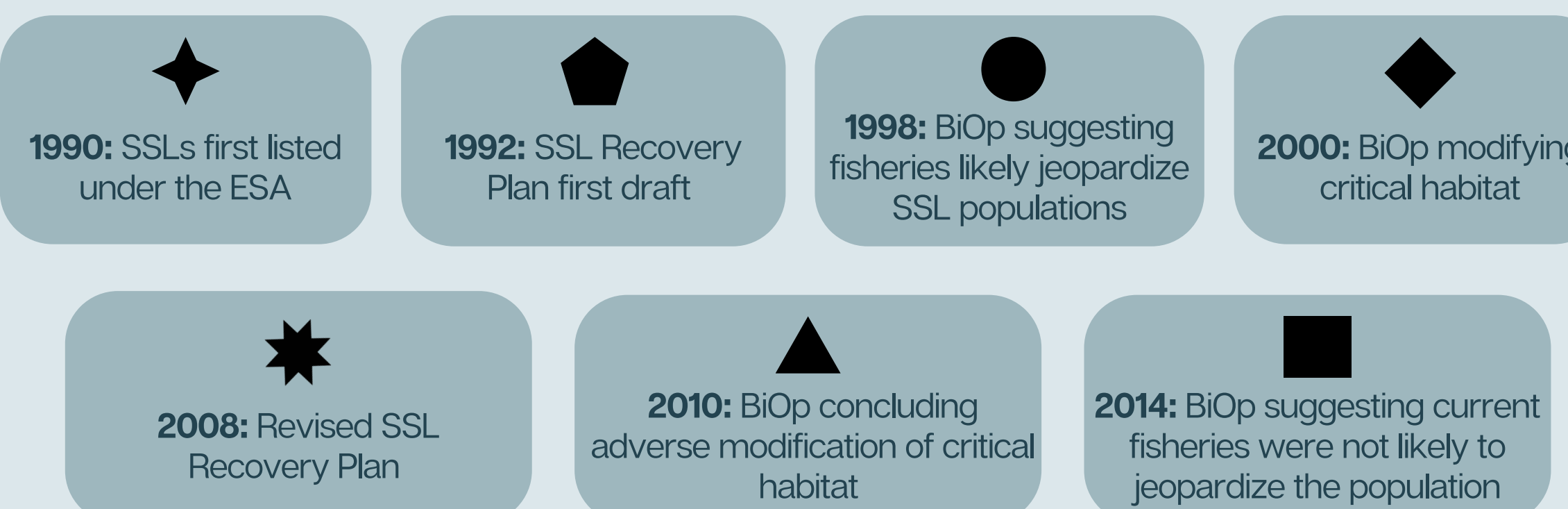
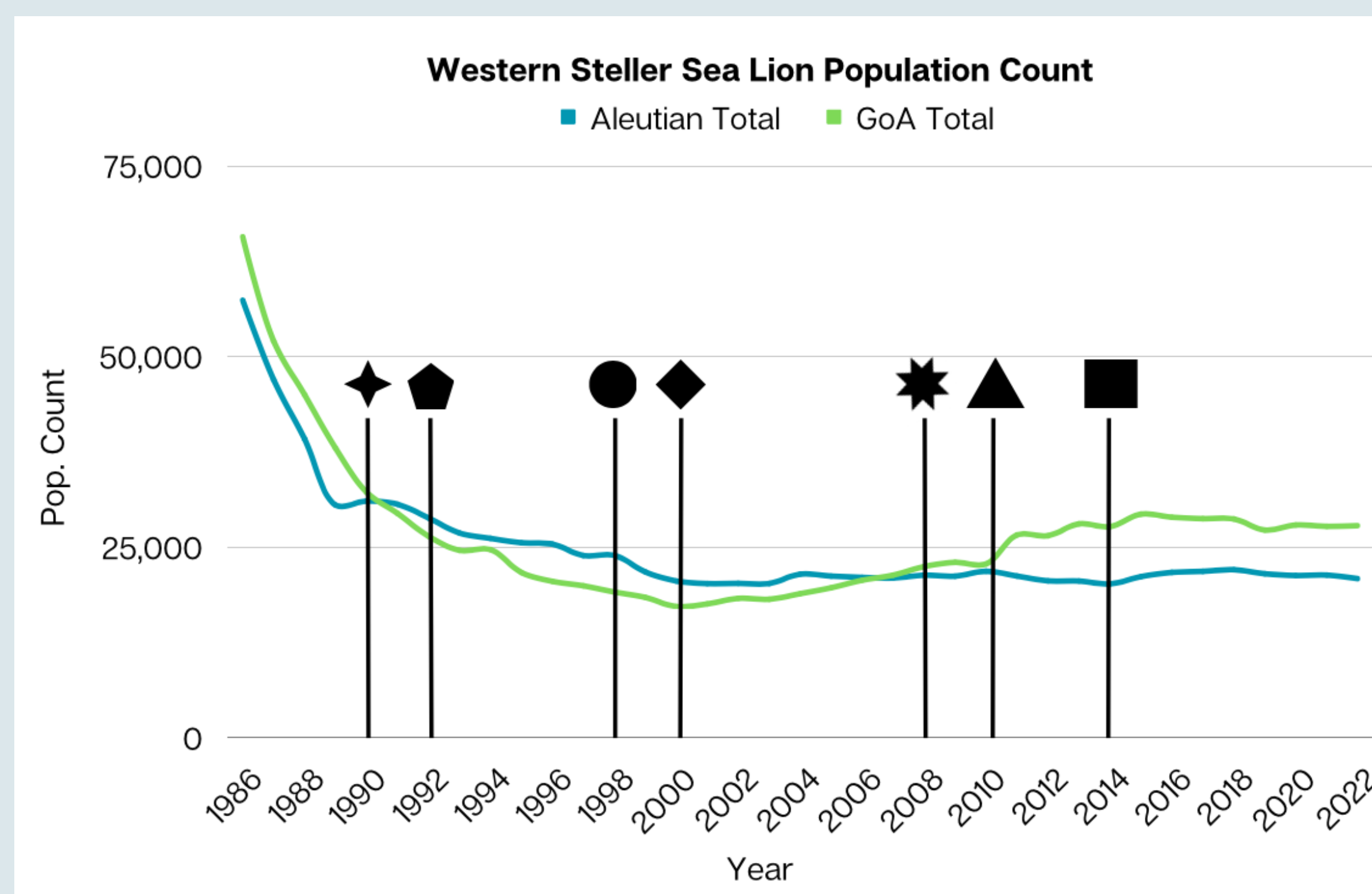


Figure 3: Population count data of western Steller sea lions over a 30-year period with a timeline of key management events for the Aleutian Islands and Gulf of Alaska (GoA). Data was collected from the NOAA database using modeled and observed counts.

Takeaways

Based on my literature review and discussion with expert researchers, I determined there are three viable approaches for improving the efficacy of Steller sea lion management:



Improving communication and collaboration between agencies



Establishing a consensus across agencies on which research questions should take priority



Depoliticizing funding and research efforts towards Steller sea lion conservation

Broader Implications

The SSL case study represents the intractable environmental conflict that many endangered species face:

Highly **politicized** cases such as the reintroduction of Gray wolves in Yellowstone (fig. 4)



Figure 4: Gray Wolf. Source: National Geographic



Figure 5: North Atlantic Right Whale. Source: NOAA Fisheries

Instances where there are **multiple potential factors** contributing to decline, such as the North Atlantic Right Whale (fig. 5)

Areas of focus for future conservation efforts:

- Organize task forces across research and management organizations
- Develop events focused on building scientific consensus
- Focus research on the influence of politics on funding and management

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